

AMATEUR SATELLITE REPORT

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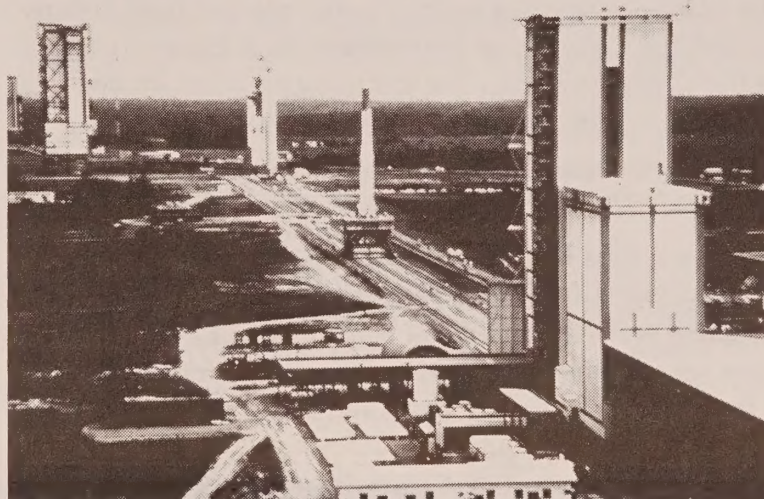
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Flash!

According to the Director of Solar Physics Research at NOAA's Space Environment Laboratory, Boulder, CO, the peak of the next solar cycle could occur much earlier than expected and could possibly be the most intense ever measured. Quoted in the March 9 *New York Times*, Dr. Patrick McIntosh believes that the solar maximum could occur as early as late 1988. If the eleven year cycle persisted, 1992 would have been the maximum. Solar activity levels, he said, could reach normal maximum levels by this summer if current trends continue. He bases his findings on early indicators of a massive buildup in three gauges. These are total number of sun spots, 10 cm radio noise rate of increase and the progression of "solar crowns" (ribbon-like loops). Dr. McIntosh cautions that predicting solar activity is risky and the currently rapidly rising levels could flatten out. But NASA is apparently taking the early indicators seriously and preparing contingency plans to protect its satellites. Atmospheric heating during periods of high solar activity results in higher drag which in turn causes early re-entry of low earth orbiting satellites. The onset of an early solar maximum may affect planning for some low earth orbiting AMSAT missions, officials said.



Phase 3C launch preparations at Kourou, French Guiana, will lead to a late-May or early-June launch. This Arianespace photo shows an earlier Ariane rocket moving towards the ELA-1 launch pad.

This data is what teachers and students around the world will use to plot the skiers' progress on their classroom maps. Four hundred AMSAT teacher's guides to the expedition have been mailed to interested teachers and hams in all corners of the world. They in turn have copied the guides and insured still further field distribution. Skitrek Guides are in use in Brazil, Venezuela, Australia, New Zealand, India, nearly all the countries of western Europe and nearly all provinces of Canada and all of the United States. A special center of interest is South Africa, where Hans Van de Groenendaal, President of Southern Africa AMSAT, has involved more than a hundred classrooms. Hundreds of thousands of students world-wide will be following the trek across the ice via the Digtalker and learning about Amateur Radio in the process.

The Canadian Communications Support Base team has found that getting to Resolute Bay, N.W.T. is not easy. Bill Hardie, VE3EFX, was not able to go due to illness and has been replaced by Garth Hamilton. The first trip north February 23rd was aborted when bad weather prevented air traffic into Resolute. This was not unexpected as flights had not made it into this arctic outpost for several weeks. The team finally arrived safely on the evening of February 26th. Communications from Resolute are now expected on the 20 and 40 meter bands using the call C18C.

The expedition continues on track for a start date around March 1st. Since communications via HF radio with the Rus-

Transpolar Skitrek Progress Report #5: February 26

Prepared by Rich Ensign, N8IWJ
AMSAT Science Education Advisor

For Use With The AMSAT Teachers Guide
"Exploring The High Arctic From Your Classroom"

This week the UO-11 beacon on 145.825 MHz has displayed a great deal of activity including a test and preview of the NORDSKI COMM Transpolar Skitrek Position Report via the Digtalker. On Saturday, February 27th, the Digtalker said the following, "Number 00, Priority 000, Date 26 of February, Time 19 hours and 20 minutes GMT. You are at 00.00 degrees N and 123.45 degrees E. 73's."

sian team have been hampered by poor propagation, the actual departure may be known first via the UO-11 Digitalker. Monitor UO-11 during its 8:30-11:30 AM and 8:30-11:30 PM (local time) passes for an early indication the Skitrek is actually under way.

Transpolar Skitrek Progress Report #6: March 3 (Revised)

The Russian-Canadian Transpolar Skitrek Expedition has begun its more than three month journey across the polar ice cap. The trek began on the afternoon of March 3 at 1331 hours local time (0731 hours March 3 UTC) as the small group, made up of nine Russians and four Canadians, moved northward onto the smooth land ice beyond Cape Arctic, at the top of the Severnaya Zemlya Islands. Equipped with only their skis, radios and heavily loaded backpacks, the skiers are heading for the North Pole and then directly on to Cape Columbia at the northern tip of Ellesmere Island in the Canadian Arctic. The following positions (in decimal degrees) will be helpful to those plotting the trek:

Starting Point — Cape Arctic: 81 deg 15 min N, 95 deg 40 min E
Ice Island North Pole 28: 87 deg 48 min N, 142 deg 00 min E
(Communications Support Base)
End Point — Cape Columbia: 83 deg 06 min N, 70 deg 35.4 min W

The skiers' daily routine consists of alternating 50 minutes of skiing with 10 minutes of rest for 8 to 12 hours. They then set up their single large tent, have a meal together, a few minutes on the HF radio and a well deserved night's rest. The morning routine includes a quick breakfast and tent take-down as they trigger their Emergency Locator Transmitter (ELT) during a SARSAT/COSPAS Search and Rescue Satellite pass. The Russian COSPAS Control Center will determine the latitude and longitude of the skiers and telex this information to the University of Surrey in the U.K. Surrey will then program the Digitalker on the UoSAT OSCAR 11 Satellite to articulate the skiers' position back to them. This unprecedented hybrid link-up, known as NORDSKI COMM, is the co-primary navigation tool for the skiers. Celestial navigation is the other (and more traditional) method.

Later, as the trekkers cross the pole and finish the second leg of their journey to Canada, SARSAT responsibility will be picked up by the Canadian SARSAT control center at Trenton, Ontario. From there, the data will be flashed to a coordination center which has been established in Ottawa at the facilities of Telesat Canada, a commercial satellite company which has agreed to help with NORDSKI COMM. When SARSAT Tracking responsibility comes to the Canadians, engineers at Telesat will telex the trekkers' position to Surrey to insure navigation continuity.

The format for the 145.825 MHz FM UoSAT Digitalker transmissions in plain English include:

Position Report Number
Priority Code
Date
Time
Latitude (in either decimal or degrees & minutes)
Longitude (in either decimal or degrees & minutes)
Occasional other info from the skiers such as temperatures

The Digitalker has been speaking for about 1 minute followed by 3 or 4 minutes of telemetry and bulletins. The skiers have had some difficulty with this format and have asked for the amount of time the Digitalker is on to be increased. Surrey should comply with this request in the next several days easing everyone's reception of the Digitalker.

Starting conditions were difficult for the trekkers with the temperature at -45 degrees Celsius and high winds. The skiers reported the UoSAT Digitalker signals were "good copy" on their special ICOM micro 2AT radios.

All Digitalker transmissions will be placed in a log on the WØRPK AMSAT Bulletin Board to aid in plotting the skiers' progress. The Priority Code is for emergency communications feedback to the skiers should HF propagation between the Communications Support Bases and the skiers fail. Arctic Communications Support Bases are located at:

Resolute Bay in the Canadian Arctic (CI8C)
Sredny Island in the Soviet Arctic (EKØQCG)
Soviet Ice Island North Pole 28 (4KØDCG)

Current call signs of individuals at Resolute are Garth Hamilton (CI8HO) and, beginning Friday March 4th, Andy McLellan (CI8CW). Leonid Labutin (UA3CR) has been using the call EKØCR at the Sredny Island Support Base. Listen for these calls on the lower Canadian phone portion of the 20 meter band around 1600 UTC. As they talk they often refer to the skiers as the moving group. Remember, HF links are the skiers lifeline. Direct communication with the skiers will not be possible. All Support Base Operators (SBO's) are avid DX'ers and will be happy to set up a phone or CW QSO with you after their business is done. Resolute, and later Sredny and Ice Island SBO's are keeping weather logs for educators and will be happy to pass this data on to them via QSO. Weather logs will also appear on the WØRPK AMSAT Bulletin Board version of these Progress Reports.

In press interviews before they began, both Expedition Leader Dimitri Shparo, UA3AJH, and Canadian Leader Richard Weber, VE8RW, spoke of the friendship and cross cultural nature of this adventure on the ice. We wish them well and appreciate this unique opportunity to involve Amateur Radio.

A continuing series of Progress Reports like this one may be accessed via packet BBS, AMSAT Nets and the main educator source, the WØRPK AMSAT Bulletin Board (1-515-961-3325). Comments and questions about the reports should be addressed to Rich Ensign, 421 N. Military, Dearborn, MI 48124, U.S.A.

Transpolar Expedition Position/Condition Reports Via Nordski COMM & HF

Progress Synopsis

REP-	PRIOR.	DATE/TIME(GMT)	LAT (N)	LONG	REMARKS
---	---	03MAR88 07:31	81d 15.0'N	95d 45.0'E	Start point
01	000	03MAR88 11:24	81d 21.2'N	96d 12.8'E	15.2 km trek
02	000	04MAR88 11:13	81d 32.3'N	97d 0.0'E	Temp -28C Latitude and longitude data for #02 may be bad.

03 000 05MAR88 12:44 81.6d N 96.87d E
Skiers via HF: Cloudy/snow/temp at start -18C at end -21C...some open water
Skiers report moisture build-up in their suits that is not draining properly.
Digitalker data formats are still being adjusted. Be prepared for latitudes
and longitudes in either decimal degrees or degrees and decimal minutes
of arc.

06MAR88 Digitalker repeats yesterdays data
Skiers via HF: Snow, high winds & large open water leads. Camped beside
a lead in hope it would close during the night. Only 1 or 2 km progress to
the ENE today. Outer garments functioning perfectly. Inner garments retain-
ing too much moisture.

04 000 07MAR88 12:23 81d 56.6'N 97d 15.1'E

New Publications Emphasize Technical Aspects

According to Bob Diersing, N5AHD, Editor of the *AMSAT Technical Journal*, Volume 2 of the Technical Journal is coming off the presses. Articles in Volume 2 include Spacecraft Technology Trends by WD4FAB, Phase 3 Propulsion Systems by W4PUJ, Phase 4 Spaceframe Design by WD4FAB, Initial Phase 3D Radio Link Concepts by DJ4ZC, RUDAK Traffic Control by DK1YQ, PSK Interface for the TNC-1 by DB2OS, NUSAT Software by WA3PSD, Antennas for Low Earth Orbit Missions by N5BF and the Phase 3 IHU by KE3D. Orders for the *AMSAT Technical Journal*, Volume 2, may now be placed with AMSAT Headquarters.

The Proceedings of the 1987 AMSAT Space Symposium held in Detroit are now available. The publication contains an excellent collection of first-rate papers presented in Detroit by some of AMSAT's top technical experts on topics ranging from current projects to the far-out future concepts now coming into focus. The Proceedings may be ordered from Headquarters now.

AMSAT Headquarters has received a limited supply of the UK IERE publication containing detailed UoSAT OSCAR 11 papers. This publication may also be obtained now directly from AMSAT HQ.

Back issues of *Amateur Satellite Report* are also available. All issues going back to number 1 in 1981 are available to complete your library. Inquire at AMSAT HQ for prices on these back issues.

Phase 3C Launch Campaign Update: May 26 It's Go!

AMSAT's Phase 3C spacecraft edged closer to launch as Arianespace has fixed dates for upcoming launches. May 26 has been announced as the launch date for Phase 3C.

In addition to announcing the launch date for the Ariane-4 launcher, Arianespace, the marketing arm of the European Space Agency, has added a new launch in the sequence and renumbered the mission that will carry Phase 3C. The new sequence is as follows:

V-21 with SPACENET IIIR/GEOSTAR R01 and TELECOM 1C was to be launched March 11 V-22 with Intelsat V is scheduled for May 11. V-23 with AMSAT Phase 3C, METEOSAT and PANAMSAT is scheduled for May 26.

AMSAT launch support preparations will swing into high gear in early April with the dispatch to the launch site in Kourou, French Guiana, of support teams from AMSAT DL and AMSAT NA.

If all goes well and the launch takes place as scheduled, the satellite may be available for general use towards the end of June. Springtime this year would thus be a great time to get your stations ready for the most powerful and capable OSCAR ever!

A reminder is in order too. Many of the technical details of Phase 3C are being published in *Amateur Satellite Report*. ASR is a member service so you'll want to insure your membership is current. If you haven't renewed, you should do so immediately so you won't miss out on any of the information crucial to your getting your Phase 3C station up and running and ready for the commencement of operations. Renew your AMSAT membership today.

Field Operations Appointments

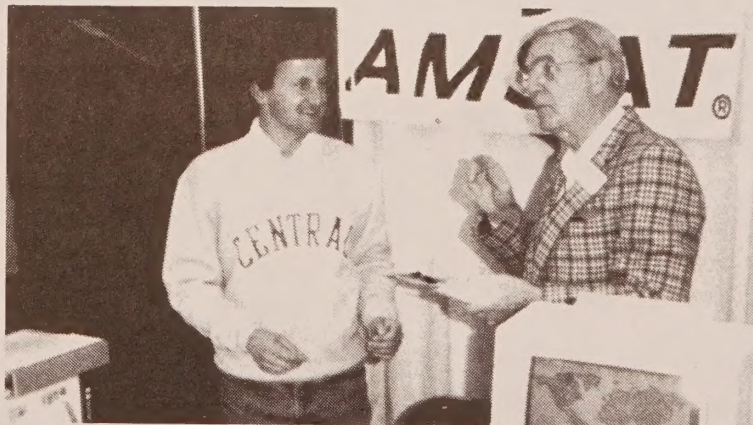
AMSAT-NA Vice President of Field Operations, Doug Loughmiller, KO5I announces the following appointments:

Ross Forbes, WB6GFJ has been named AMSAT Regional Coordinator for the Pacific region. Ross is replacing John Fail, KL7GRF who has resigned that position due to increased business commitments. KL7GRF will continue as an AMSAT Area Coordinator in the Los Angeles area. The Pacific region in the AMSAT Field OPS directorate is comprised of the states of California, Hawaii and Nevada.

K.O. Learner, K9PVW of Kokomo, IN has been named acting Regional Coordinator for the Great Lakes region. K.O. will be acting on behalf of Larry Koziel, K8MU who is AMSAT's Great Lakes Regional Coordinator. Larry will be out of the country on business for the next several months. The Great Lakes region in the AMSAT directorate is comprised of the states of Indiana, Illinois, Michigan and Ohio.

Based upon nominations by acting Great Lakes Regional Coordinator K9PVW, two Area Coordinators have been added to the Field Operations team. Ronald M. Pogue, KD9QB of Noblesville, IN and Dr. David L. Filmer, WB9QPG of West Lafayette, IN have been appointed AMSAT Area Coordinators by AMSAT Vice President of Field Operations, Doug Loughmiller, KO5I. Mr. Pogue will represent AMSAT in the Indianapolis, IN area while Dr. Filmer, a professor at Purdue University, will coordinate AMSAT activities in the West Lafayette, IN area. Both individuals are highly active in AMSAT activities in their area and will be a welcomed addition to the Area Coordinator team.

AMSAT congratulates all of the recent appointees and looks forward to their future involvement in our organization.



Southeastern Regional Coordinator Byron Lindsey, W4BIW explains features of an AMSAT tracking software package to an interested booth visitor during a recent Georgia hamfest.

AMSAT To Brief PACSAT To U.N. Health Officials

AMSAT has been invited to participate in a meeting near Geneva March 19 through March 21 to discuss possible applications of AMSAT-developed space systems and earth terminals to terrestrial health problems. AMSAT President Vern Riportella, WA2LQQ, and Engineering Vice President Jan King, W3GEY, will travel to the town of Annecy, France just south of Geneva, Switzerland, as special guests of SatelLife. That's the "Space-For-Health" project instituted by Nobel Laureate Dr. Bernard Lown of the Harvard University School of Public Health. The Rockefeller Foundation has agreed to fund travel costs to the meeting. WA2LQQ travelled to Moscow last October for an initial series of SatelLife meetings. Since then, AMSAT has developed a technical proposal for SatelLife for a joint US-USSR project to fly a PACSAT within 12 months. This PACSAT would use Amateur Radio-developed technology but NOT on Amateur Radio frequencies. An Amateur Radio PACSAT would be constructed in parallel since the techniques involved would be identical and they could be built essentially side-by-side at a cost savings.

The Annecy meetings later this month will involve representatives of the World Health Organization and SatelLife working groups from the UK, USSR and US. AMSAT's presentation will focus on the capabilities of a PACSAT and will emphasize the possibilities of very simple earth terminals. Portability and low cost are very important since the health workers using the projected SatelLife PACSAT

will be working far afield often from small vehicles. As presently envisioned, a state-of-the-art PACSAT earth terminal will use small omni antennas and fit into an attache case. It will consist of two HTs, one micro TNC and a laptop computer.

AMSAT will demonstrate packet radio at the meeting to show the basic technique and typical equipment. The hardware demonstration is being supported by three companies. Radio Shack is supplying the computers, Yaesu is providing the HTs and TASCOS of Japan is supplying their ultra-miniature TNCs which are the size of a pack of cigarettes. JAMSAT officials were especially helpful in obtaining the TASCOS TNCs and expediting them to the U.S.

If the SatelLife Project achieves its first major milestone, it will have a small number of PACSATs in orbit to provide electronic mail service to health workers in the field involved in such important projects as AIDS research in Africa and WHO's enhanced inoculation program. Should this milestone be reached, Amateur Radio will have again asserted its value to society and thus validated its use of spectrum.

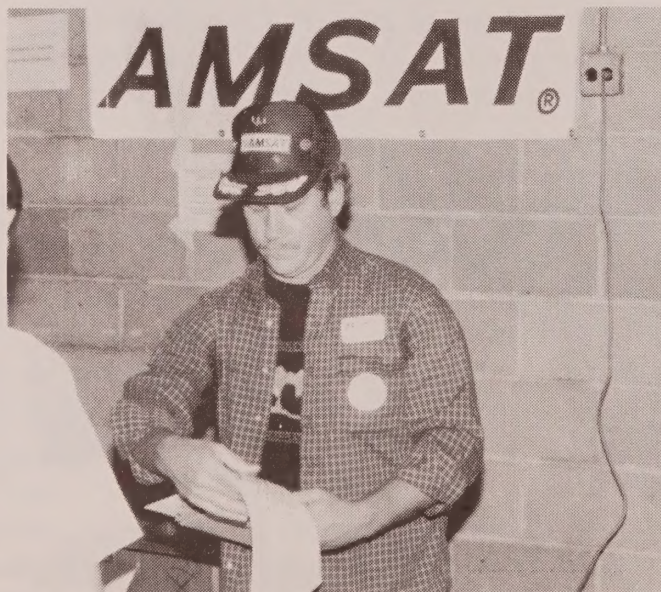
Short Bursts

- UoSAT OSCAR 11 celebrated its fourth birthday March 1. It was launched on March 1, 1984 and since then has completed more than 21,000 orbits. The bird continues in excellent health with many activities continuing to occupy it and its ground support team at the University of Surrey, England. AMSAT-NA congratulates the Surrey team on the birthday bird!

AMSAT® NA

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Rocky Mountain Regional Coordinator Jack Crabtree, AAØP mans the AMSAT booth at a Colorado hamfest last fall.

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